

**AN ANALYSIS ON HOUSEHOLD CONSUMPTION OF ELECTRICAL ENERGY IN  
CHENNAI CITY TAMIL NADU**

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**Abstract**

Electricity has earned a really vital place in each family. It's a significant contributor towards improvement of the quality of living of any person, family and society at massive. This paper aims to seek out the monthly average family electricity consumption and differences due to the season during this consumption for the months of summer, winter and moderate weather for Chennai city. The demand for electricity in a household is derived from the electricity consuming appliances used by the household. It is common knowledge that electricity is primarily used in the domestic sector for lighting and for running appliances like refrigerators, air-conditioners (ACs), water-heaters, kitchen appliances, television (TV), music system, etc. According to the World Bank (2008), lighting accounts for approximately 30 percent of total residential electricity use in India, followed by refrigerators, fans, electric water heaters, and TVs. Approximately 4 percent of total residential electricity used is for standby power. Over the years, higher degree of urbanisation has increased the domestic sector's access to electricity. The factors that influence the electricity consumption of a family are examined by employing a form primarily based study of city household's elite via sampling technique. Analysis models are run to explain the pattern of family electricity consumption. The results from the study show that the stock of appliances in an exceedingly family contributes the foremost to the variation within the variable quantity. Associate degree inverted has been derived from the first knowledge utilized in the study.

**Keywords:** Electricity, contributor, electricity consumption, employing, variable quantity

**Introduction**

Electricity has attained a very important place in every household. It is a major contribution towards improvement of standard of living of an individual family and society. The demand for electricity is household derived from the consuming of electricity and electrical

appliances used in the household. It's a common knowledge that appliances like refrigerators , televisions , air conditioners ,water heaters likely to cause more power .(Milano)

Important feedback on electricity consumption may provide tool for customer to better control their consumption and ultimately save energy (Fisher) .The electrical consumption pattern varies from different houses or groups.(Knowles) It is said that there are high and low users identified as contributing to overall increase in consumption (Firth et al.)There is a consumption pattern to different households the recent survey said that electricity markets have been renewed and are been charged more this affects the consumers due to increase in price(Gangotri and Bhimwal) there is certain requirements we can combine both the co2 and also alternative sources so that the output and input of electricity comes better(Blaszczyk et al.)) The demand for electricity in a household is derived from the electricity consuming appliances used by the household. It is common knowledge that electricity is primarily used in the domestic sector for lighting and for running appliances like refrigerators, air-conditioners (ACs), water-heaters, kitchen appliances 1, television (TV), music system,(Nidhi et al.) there is certain consumption in every household domestic consumers of electricity are being affected disappointed because there will be a tariff hike on electricity in Tamilnadu (Ragavendiran et al.) the average electricity consumption in tamilnadu is around 20%during the price increase before increase of the tariff tax the consumption pattern was around 75% to 85% there is a drastic change it has affected the economic situation and the society (Vasanthakumar and Srikanth).In the literature, the contribution of demand-side management techniques in achieving efficiency in household appliance use has been discussed. Ullah et al. (2013) presented an overview of home appliance scheduling techniques to implement demand side management in a smart grid. In this research, residential load controlling techniques were employed for efficient consumption of electricity in homes and offices. The techniques used in the research reduced the energy consumption cost and consumers were encouraged to schedule their appliance use by load shifting methods. The contribution of demand side management (DSM) to increasing efficiency

of the electricity system was presented by Strbac (2008). The techniques discussed by this paper include load shifting, direct control methods of turning off appliances for short periods of time, The power of electricity price has been increased three year high of Rs 9 per unit but before that the average price was around Rs5 this has caused the economic situation of the society and also

affects the consumption pattern of household (Rakesh Kumar, 2017) Efficient control is often the most effective option to reduce energy costs in electricity consumption by household appliances. Using demand side strategies, customers are charged different rates during peak times and off-peak times(Patrick ozoh,2012) efficient use of household appliances involves the effective application of demand-side management techniques to decrease energy consumption and demand(Knowles). This work proposed (Dr.Lakshmi T and Rajeshkumar S) that demand-side management is the planning, implementation and monitoring of energy utilization activities carried out by electric utilities to influence energy demand in order to modify consumers' level and pattern of energy usage for improved efficiency of appliance use. (Demirel). The aim of the research is Whether there is any alternative means by the people to save electrical energy.whether the Electricity consumed by the people in appropriate way

### **Hypothesis**

#### **Null**

There is no significant change in the household consumption pattern of electricity with the increase in price of electrical energy

#### **Alternative**

There is significant change in the household consumption pattern of electricity with the increase in price of electrical energy

### **Materials and Methods**

The current research work is made on the basis of empirical format in which it includes survey, statistics, analysis etc. and the current paper is based on the stratified random method of sampling and secondary sources include articles, eBooks, and journals and the research work has been carried out in empirical study using simple random sampling method

### **Results**

Out of 350 responses from household members . Majority 54.5% of household people pay electricity bill monthly and 30.3% pay through rent and 12.1% pay as quarterly basis .

Majority 42.4% spend around 10000-20000 as monthly expenditure and 36.4% spend around 20000-30000 and 21.2% spend around 30000 and above. Majority 27.3% people are self-employed and 24.2% people are work in private sector and 21.2% work in public sector. Majority 33.3% spend around 3000-5000 on electricity and 27.35 spend around less than 1000 and 24.2% spend around 1000-3000. Majority 60.6% of people live in own house and 39.4% people live in rent house. Majority 93.9% people use television appliances and 90.9% use refrigerator . majority 27.3% consume around less than 300 in bill units and 24.2 % consume around 500 -800 and 24.2% consume around 300-500 and (Trishala A ,Lakshmi T and Rajeshkumar S) only 6.1% consume around more than 1000. Majority 51.5% would like to save electricity in their home and 24.2% wants to consume a lot and 21.2% a fair amount . Majority 66.7% knows the current price slabbing of their electricity bill and 18.2% doesn't know about the price slabbing and 15.2% never mind about it . Majority 30.3% turn off their large equipment and 24.2% rarely switch off and 21.2% never switch off . Majority 63.6% use standard fluorescent light bulb and 24.2% use normal light bulb . Majority 50% people average use air conditioner around 5 and above hrs and 25% not using air conditioner season to varies and 15.6% use 1-3 hours daily. Majority 84.4% people reduce consumption of electricity and 15.6% doesn't want to reduce consumption of electricity .Majority 84.4% people use solar energy as alternative measures and 9.3 % wind energy. Majority 59.4% are using solar energy in their houses and 40.6% are not using

### **Discussion**

The positive impact of the research is that only certain amount of around 40% of people consume electricity and knows the price slab of electricity consume according to the pattern . mostly pay electricity bill monthly basis (Ibrahim et al.).The negative impact of the research is that there is affect in consumption pattern of electricity but almost more people are not in aware of consuming electricity after the price hike in tamilnadu .60% of people overuse electrical appliances they are aware of alternative measures but are not using (Gjorgiev and Sansavini) .Tamilnadu is planning to add 3000w green energy this year due to price hike 1500w of solar power at Rs3 per unit (Lamedica et al.) Most people don't give thought on consuming electricity over usage will lead to economic problem. ("Editorial Board") there is certain negative impact that tamil nadu has only reduced electricity tariff only for industrial purposes this affects the usage of domestic appliances (Shreya jai, 2017) the reason for the price hike in tamil nadu is

that there is a war in renewable and climatic change condition this created an impact on electrical energy (Ansari et al.) The average monthly power consumption varies according to season change .It is proved that there is significant change (Milano).It is proved that there is significant change in consumption pattern of electricity with increase in price of electrical energy because there is heavy price hike of electricity people consumption pattern varies. People are aware to use alternative measures for consuming electricity.(Karady and Holbert)

### **Conclusion**

The trends in household electricity consumption clearly show that the domestic consumers, per capita electricity consumption in India, and in particular in chennai have increased over the years. The average monthly power consumption of the households varies across seasons as the requirement of electricity varies as per the prevailing temperature. The inverted-U non linear TEC shows that as temperature rises, more electricity is consumed as a result of usage of cooling appliances like AC, fridge, Cooler etc(Knowles). The TEC across various income groups indicated that the cooling appliances are possessed more by the rich class vis-à-vis poor class. The independent variables; household income, stock of appliances, usage of appliances, family size, dwelling size, time spent out by the family members and higher education level were found to be significant in explaining the variation in the monthly electricity consumption of a household. The income elasticity of household electricity consumption is moderate positive at 0.28. The  $\beta$  coefficients of the variables indicate that there is not much of seasonal variation in the explanatory variables.

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